



# Fact Sheet

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## The Dalles General Model

**Purpose:** To investigate the location of a juvenile fish outfall site to minimize predation and tailrace egress time, and to evaluate and design spillway modifications that will improve fish passage survival.

**Background:** The Dalles Dam is located 192 miles upstream from the mouth of the Columbia River, two miles east of the city of The Dalles, Oregon. The dam extends 1.5 miles from the Oregon shore to the navigation lock on the Washington shore. Because the boundary between the two states follows the old river channel, The Dalles Dam is almost entirely in the state of Washington. The Dalles project consists of a powerhouse with 22 hydropower turbines with a combined discharge capacity of 2,290,000 cfs, a spillway, and navigation lock. The spillway at The Dalles is 1150 ft wide with 23 tainter gate-controlled bays. There are no spillway deflectors at The Dalles Dam. The horizontal apron-type stilling basin at The Dalles is about 190 ft long with an invert elevation of 55 ft. One row of 8-ft-high baffle blocks and a 12-ft-high end sill provide for energy dissipation in the stilling basin. Training walls, extending over two-thirds the length of the stilling basin, separate Bays 1 and 2, 2 and 3, and 22 and 23. The tailwater channel downstream of the stilling basin has a mean elevation of 68 ft with some irregularities, resulting in elevations less than 68 ft. The shallow shelf down-stream of the stilling basin is about 850 ft long downstream of the north end of the spillway but only half that long at the south end of the stilling basin. The navigation lock is located north of the spillway with its approach channel well downstream the spillway.



**Facts:** At the request of the U.S. Army Engineer District, Portland, a 1:80 scale physical model was designed and constructed at the U.S. Army Engineer Research and Development Center by the Coastal and Hydraulics Laboratory. The model reproduces the Dalles Powerhouse, spillway, navigation lock, 7900-ft of the upper pool and 5300-ft of the tailrace. The model was used to evaluate the hydraulic conditions near proposed juvenile fish outfall locations and spillway operations in relation to modifications designed to improve fish passage at the dam.

**Points of Contact:** For additional information, please contact  
Mr. Glenn Davis at 601-634-4183 ([glenn.davis@erdc.usace.army.mil](mailto:glenn.davis@erdc.usace.army.mil)),  
Mr. Dwayne Fuller at 601-634-2668 ([billy.d.fuller@erdc.usace.army.mil](mailto:billy.d.fuller@erdc.usace.army.mil)) or  
Mr. Dennis Markle at 601-634-3680 ([dennis.g.markle@erdc.usace.army.mil](mailto:dennis.g.markle@erdc.usace.army.mil))